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Final

Preliminary Assessment Work Plan and Conceptual Site Model

MRP Area UXO 0001, St. Juliens Creek Annex
Chesapeake, Virginia

NAVFAC
Naval Facilities Engineering Command

Prepared for

Department of the Navy

Naval Facilities Engineering Command Mid-Atlantic

1000

Contract No.
N62470-08-D-1000
CTO-0027

January 2009

Prepared by

CH2MHILL

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Contents

Figures

Attachments

Acronyms and Abbreviations

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSM	conceptual site model
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
EOD	explosive ordnance disposal
GIS	geographic information system
IAS	Initial Assessment Study
IR	Installation Restoration
IRP	Installation Restoration Program
MARMC	Mid-Atlantic Regional Maintenance Center
MC	munitions constituent
MEC	munitions and explosives of concern
MR	munitions response
MRP	Munitions Response Program
MRSPP	Munitions Response Site Prioritization Protocol
NAVFAC	United States Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NFA	no further action
PA	preliminary assessment
PAH	polycyclic aromatic hydrocarbons
RRR	relative risk ranking
SARA	Superfund Amendments and Reauthorization Act
SJCA	St. Juliens Creek Annex
SPAWAR	Space and Naval Warfare System Command
SSA	site screening assessment
SVOC	semivolatile organic compound
USC	United States Code
USEPA	Environmental Protection Agency
UXO	unexploded ordnance
VDEQ	Virginia Department of Environmental Quality
VOC	volatile organic compound

SECTION 1

Background

1.1 Introduction

This work plan presents the approach for conducting the Preliminary Assessment (PA) for Munitions Response Program (MRP) Area UXO 0001, St. Juliens Creek Annex (SJCA), located in Chesapeake, Virginia. This PA work plan has been prepared under the United States Navy, Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic, Comprehensive Long-Term Environmental Action Navy (CLEAN) 1000, Contract No. N62470-08-D-1000, Contract Task Order 0027. It provides guidance and procedures that will be followed to ensure sufficient and appropriate data are collected and presented during the PA. Additionally, it presents the preliminary conceptual site model (CSM) for MRP Area UXO 0001, which will assist the team in planning, interpreting data, and communicating throughout the PA. This plan has been prepared for review by the SJCA Installation Restoration (IR) Partnering Team, which consists of representatives from NAVFAC Mid-Atlantic, United States Environmental Protection Agency (USEPA) Region III, and Virginia Department of Environmental Quality (VDEQ).

Munitions and explosives of concern (MEC) are a safety hazard and may constitute an imminent and substantial danger to personnel and the local population. Although no work will be performed at Area UXO 0001 in association with the development of the PA, any future activities involving work in areas potentially containing MEC hazards shall be conducted with approval from the Naval Ordnance Safety and Security Activity (as applicable), and in accordance with Navy and Department of Defense (DoD) requirements regarding personnel, equipment, and procedures.

1.2 Programmatic Framework

Because the history at MRP Area UXO 0001 indicates the potential presence of MEC, it is being addressed under the Navy MRP. The PA will be conducted in accordance with USEPA and Navy guidance, including USEPA *Guidance for Performing Preliminary Assessments under CERCLA* (EPA/540/G-91/013, Sept. 1991), USEPA *Handbook on the Management of Munitions Response Actions* (EPA 505-B-01-001, May 2005), and the *Department of the Navy Environmental Restoration Program Manual* (Aug. 2006). The key legislation, policy, and guidance directing the MRP development include the documents outlined in the following sections.

1.2.1 Defense Environmental Restoration Program Management Guidance (September 2001)

In 1975 the DoD initiated a program to identify contamination and remediate problems associated with the past environmental releases of hazardous substances or petroleum products. In 1980, the Comprehensive Environmental Response, Compensation, and

Liability Act (CERCLA), or "Superfund," was passed. Though CERCLA did not apply to military facilities, the DoD adopted the program as a model for environmental cleanup. In 1986, Congress passed the Superfund Amendments and Reauthorization Act (SARA), which mandated that DoD follow the same cleanup regulations that apply to private entities and resulted in the establishment of the Defense Environmental Restoration Program (DERP). The scope of the DERP is defined in 10 United States Code (USC) 2701(b), which states that the goals of the program shall include the following:

- The identification, investigation, research and development, and cleanup of contamination from hazardous substances, and pollutants and contaminants
- Correction of other environmental damage (such as detection and disposal of unexploded ordnance) which creates an imminent and substantial endangerment to the public health or welfare or to the environment

Within the DERP, DoD created the two following program categories to reduce risks to human health and the environment: Installation Restoration Program (IRP) and Military Munitions Response Program (MMRP).

1.2.2 Draft DoD Directive Military Munitions Response Policy on Other Than Operational Ranges

The Draft DoD Directive 4715.MRP (September 2003 version) states that munitions response (MR) will be conducted "in accordance with CERCLA and [National Oil and Hazardous Substances Pollution Contingency Plan]."

1.2.3 National Defense Authorization Act (FY02) (Sections 311-312)

Sections 311-312 of the National Defense Authorization Act of Fiscal Year (FY) 2002 reinforced the DoD's 2001 DERP Management Guidance by tasking DoD to develop and maintain an inventory of defense sites that are known or suspected to contain MEC and/or MC. Section 311 requires the DoD to develop a protocol for prioritizing defense sites for response activities in consultation with the states and Tribes. Section 312 requires the DoD to create a separate program element to ensure that the DoD can identify and track MR funding. The September 2001 DERP Management Guidance and the National Defense Authorization Act FY02, described above, established the MRP. The DoD provides program guidance and methods for conducting a baseline inventory of defense sites containing, or potentially containing, MEC and/or MC. The Navy baseline inventory of sites was completed in FY02 and was used to establish the sites where PAs were needed to further evaluate the potential for MEC and MC. Each year, the inventory is reviewed and updated to identify any new sites identified to potentially contain MEC and/or MC.

1.3 Facility Background and Description

The SJCA facility is approximately 490 acres and is situated at the confluence of St. Juliens Creek and the Southern Branch of the Elizabeth River in the City of Chesapeake, in southeastern Virginia (**Figure 1-1**). Most surrounding areas are developed and include residences, schools, recreational areas, and shipping facilities for several large industries.

SJCA began operations as a naval facility in 1849. The annex was one of the largest ammunition depots in the United States involving wartime transfer of ammunitions to various other naval facilities. Specific ordnance operations and processes conducted at SJCA included stockpiling Explosive D (ammonium picrate, or picrate acid) for use in projectiles, manufacturing MARK VI mines, assembling small-caliber guns and ammunition, storing torpedoes, filling shells, testing ordnance, and distributing and receiving ammunition. In 1975, all ordnance operations were transferred to the Yorktown Naval Weapons Station. As a result, decontamination was performed in, around, and under ordnance-handling facilities at SJCA in 1977.

SJCA has also provided non-ordnance services, including degreasing; operation of paint shops, machine shops, vehicle and locomotive maintenance shops, pest control shops, battery shops, print shops, electrical shops, boiler plants, wash racks, and potable water and salt water fire-protection systems; fire-fighter training; and storage of oil and chemicals.

Activity at SJCA has decreased in recent years and many of the aging structures are being demolished. The current primary mission of SJCA is to provide a radar-testing range and administrative and warehousing facilities for nearby Norfolk Naval Shipyard and other local naval activities. SJCA also provides light industrial shops and storage facilities for several tenant commands; including Defense Reutilization and Marketing Office storage, Space and Naval Warfare Systems Command (SPAWAR), Mid-Atlantic Regional Maintenance Center; and a cryogenics school.

1.4 Background and Description

MRP Area UXO 0001 is the current and former wharf areas and piers along the shoreline of the Southern Branch of the Elizabeth River, comprising approximately 1,800 linear feet (**Figure 1-2**). One wharf, constructed in 1917 for loading Mark VI mines, was located in the northeast portion of SJCA adjacent to Buildings M-5 and 190. This wharf is no longer present, with the exception of remaining pilings. During World War II, a second wharf was constructed in the southeast portion of the SJCA to support the increased production for the war. Ordnance loading activities continued until the early 1970s, when production declined commensurate with the disengagement policy and the reduced operations in southeast Asia. The southern wharf was damaged when two ships struck the wharf in 1975; however, portions of it are still functional. The damaged portion of the wharf is scheduled for demolition in fiscal year 2010. The northern wharf area was previously identified as IRP Site 20.

The Initial Assessment Study (IAS) indicated that Explosive Ordnance Disposal (EOD) team divers searched the IRP Site 20 (northern wharf) area and identified metal and thick silt deposits near the former pier. It was concluded that ordnance had likely been dropped into the sediment adjacent to the former wharf area during loading and unloading operations. The ordnance presence was not considered a hazard as long as the sediment was not disturbed. The IAS recommended that real estate records be annotated to indicate that MEC may be present.

During the Relative Risk Ranking (RRR), a site reconnaissance, magnetometer survey, and sediment sampling were conducted in the IRP Site 20 (northern wharf) area. Approximately

68 contacts were identified in the area surrounding the former wharf pilings; however, contacts indicate all types of buried metallic objects and do not necessarily indicate the presence of MEC; no visual confirmation of the contacts was made. One volatile organic compound (VOC), multiple semivolatile organic compounds (SVOCs), one pesticide, one explosive, and multiple inorganics were detected in the sediment.

As part of the site screening assessment (SSA), the analytical results from the IRP Site 20 sediment samples collected during the RRR were used to conduct human health and ecological risk screenings. No risk was identified to human receptors. Potential ecological risk was identified for benthic organisms in the sediment. Mercury and several polycyclic aromatic hydrocarbons (PAHs) were detected at concentrations similar to those detected in urban water bodies; 1,3-dinitrobenzene was detected in one of four samples, but no toxicity screening value exists. Therefore, the risk was considered minimal, and no further evaluation of ecological risk was recommended.

During the July 2001 partnering team site visit, consensus was reached for no further action (NFA) for IRP Site 20 under CERCLA based on the findings of the human health and ecological risk screenings and the fact that potential risk from MEC would be addressed under the Navy's Range Program. The NFA decision was documented in the SSA. Based on recommendations made in the SSA, signs were posted in the area to prohibit intrusive activities, and the United States Army Corps of Engineers (USACE) was notified of the potential presence of MEC. No Navy or USACE restrictions were implemented on the water body. The Navy's Range Program was never fully implemented, and ordnance sites are now addressed under the MRP. Because site history indicates a potential presence of MEC, in 2008 the wharf areas (northern and southern) were identified as MRP Area UXO0001 and included under the MRP.

SECTION 2

Objectives and Scope

This PA work plan presents the procedures for conducting the PA for MRP Area UXO 0001. It provides guidance that must be followed to ensure sufficient and appropriate data are collected and presented in the PA report. It also presents the preliminary CSM, which will assist the team in planning, interpreting data, and communicating throughout the PA and help the team draw logical conclusions about Area UXO 0001. This work plan will establish the methods to be used to accomplish these objectives.

The general objectives of the PA are to

- Eliminate from further consideration those areas that pose no threat to public health or the environment
- Identify areas requiring further investigation prior to arriving at decisions on the need (or lack of need) for remedial actions
- Identify the need for an accelerated remedial action or removal action due to an imminent threat to human health or the environment
- Evaluate the area to prioritize or sequence with other sites for further action and determining costs to complete cleanup

To accomplish these objectives, the scope of work includes a desktop review of all available data and interviews. The findings will be compiled into a PA report for evaluating and determining the appropriate response actions required (if any) to address safety, human health, and the environment. The PA will not include any sampling of or visits to UXO 0001 because the areas of concern are located under water. Therefore, certain elements such as estimates for the depth of MEC, quantity of MEC, and density of MEC will be qualitative and based on the information gathered as part of the desktop review.

SECTION 3

Data Collection

The PA process will involve collecting and reviewing existing and available information associated with MEC-related activities at MRP Area UXO 0001. Data collection activities will include offsite and onsite archival research and interviews. When possible, data collection will be conducted from CH2M HILL office locations using internet-based data sources.

3.1 Desktop Data

Desktop data consists of data collected from file sources, historical records reviews, and site-specific in-house files. NAVFAC and SJCA security guidelines pertaining to document duplication and removal will be followed. The majority of information gathered will be through national and local archive/file searches and desktop information collection and analysis.

Local archive and desktop data sources may include the internet (SJCA IR website, USEPA website, VDEQ website, City of Chesapeake website), previous investigation reports, local libraries (City of Chesapeake Public Library System), newspapers, City of Chesapeake public records, and SJCA Facilities Operations records.

National archive data sources and data repositories may include Navy Range Inventory Database, National Archives and Historical Information facility, Washington D.C.; NAVFAC real estate archives; and the current Naval EOD Operations Database. The appropriate data-handling processes will be followed for each type of datum.

The following information will be gathered and reviewed during the archive search where available:

- Maps and aerial photographs, including photogrammetry and orthophotos of MRP Area UXO 0001
- Environmental, cultural, and historical conditions
- Environmental surveys, studies, or assessments, including:
  - Physical investigations
  - Chemical sample results
  - Results from previous surface clearances/maintenance, geophysical surveys, and sampling programs
  - Identification of potential pathways and receptors
- MEC-related operations records
  - MEC-handling and storage procedures

  - Types and quantities of MEC handled
  - Dates and durations of MEC-related operations
- Reports of accidental encounters with MEC
- EOD reports
- Real estate records
- Environmental cleanup records
- Newspaper articles
- Ordnance inventory records
- Property reuse, transfer plans (zoning plans, deeds), and installation master plans
- Available geographic information system (GIS) data

3.1.1 Desktop Data Documenting

Copies of all pertinent data will be kept and filed as allowed. A Document Log Sheet (**Attachment 1**) entry will be made at the time of collection. This log will include the following information:

- Data source
- Date/time collected
- Employee name
- Building/activity providing document
- Document title
- Disposition of document

All documentation collected will be scanned (if hard copy) and uploaded to the local secure server, to the specified file folder. Hard copies will be kept in the project files located in CH2M HILL's Virginia Beach Office.

3.1.2 GIS/Spatial Data Documenting

GIS/spatial data collected will be uploaded and verified by CH2M HILL GIS personnel for spatial correctness. Metadata will be kept to identify any adjustments made to collected spatial data. Adjustments can include:

- Geographic coordinate adjustments
- Data set reduction/extraction
- File structure changes

A Document Log Sheet (**Attachment 1**) entry will be made at the time of data collection.

3.2 Interview Data

Interviews will be scheduled with current SJCA personnel and active and retired DoD civilian and government personnel capable of providing pertinent information regarding

MRP Area UXO 0001. The goal of these interviews is to validate and verify data collected during the desktop data collection and review, and to identify other potential information not previously identified. Personnel to be interviewed will be identified through several sources:

- Referred to by base personnel
- Identified by name during archival records review
- Solicited through approved base resources

Names of potential interviewees will be provided to the Navy Technical Representative for approval before any interviews are conducted. No contact will be made with potential interviewees until proper approval has been received.

3.2.1 Interview Data Documentation

Each interview session will be logged using an Interview Log Sheet (example provided as **Attachment 2**). To expedite the interview process, log entrees may be transcribed from recordings collected during the interview, or notes taken during the interview. Interview records will be uploaded to the specified file folder on the secure server.

SECTION 4

Conceptual Site Model

This section summarizes the preliminary CSM (**Figure 4-1**) for MRP Area UXO 0001. The CSM is a description of the area and the environment based on existing knowledge. It serves as a planning instrument, a modeling and data interpretation aid, and a communication device among team members and between team members and the general public. The CSM will be continually updated and refined throughout the PA development as data are collected and additional information becomes available.

4.1 Profile Development

The following profiles have been defined to develop the preliminary CSM:

- Facility Profile – Describes the man-made features and potential sources for munitions at or near UXO 0001
- Physical Profile – Describes factors that may affect release, fate, transport, and access to potential items of concern
- Release Profile – Describes the movement, possible migration, and extent of contaminants in the environment
- Land Use and Exposure Profile – Provides information used to identify and evaluate the applicable exposure scenarios, receptors, and receptor locations
- Ecological Profile – Describes the natural habitats and ecological receptors in the areas of concern

These profiles will continue to be reviewed and revised throughout the iterative development of the CSM. The preliminary profiles for MRP Area UXO 0001 are presented in the following subsections.

4.1.1 Facility Profile

Detailed descriptions of SJCA and MRP Area UXO 0001 are provided in **Sections 1.3** and **1.4**, respectively.

4.1.2 Physical Profile

MRP Area UXO 0001 is located in the Southern Branch of the Elizabeth River. The Elizabeth River is a brackish tidal estuary of the lower Chesapeake Bay. The areas of concern are completely submerged in the river. The depth of water near the wharf areas ranges from approximately 10 feet (near the northern pier) up to 40 feet (near the southern pier) (Underwater Construction Team One, SHRC Survey Results, September 2008) and is subject to tidal influence from the river. Riverbed sediments are the major component of the sediment at UXO 0001. Sediment samples have indicated the presence of one VOC, multiple SVOCs, one pesticide, one explosive, and multiple inorganics. It was determined that these

constituents presented minimal risk and required no further action. However, the potential presence of MEC and the possible release of munitions constituents (MC) through degradation of the MEC may require additional research and investigation. Currently, no Navy or USACE restrictions are implemented on the water body to prevent access to the area. However, the Navy has posted signs in the northern area (formerly IR Site 20) to indicate that environmental hazards may be present.

4.1.3 Release Profile

The areas of potential concern at MRP Area UXO 0001 are located near the northern and southern wharf areas where ordnance loading and unloading activities may have resulted in MEC being dropped into the Southern Branch of the Elizabeth River (**Figure 1-2**). The number and type of MEC that may have been released are currently not known. Although the probable location for the items that may have been released is local to the pier/wharf areas, the potential for migration of the ordnance exists from underwater currents, tide, and flooding. These migration methods may result in change in location or additional sediment covering the MEC. The possibility also exists for physical processes to have caused the movement or relocation of items. These mechanisms may include entanglement in fishing nets/gear, construction activities (such as repairs to the wharf after the two ship collisions with the wharf), dredging, and investigation activities/human contact.

4.1.4 Land Use and Exposure Profile

Currently, a portion of the southern wharf area is still in operation, although ordnance handling is no longer performed there; the northern wharf area has been removed (excluding the remaining pilings). Both the northern and southern wharf areas are accessible by boat from the Southern Branch of the Elizabeth River. The potential future land use for the southern wharf area will be to continue operating as a loading/unloading point for non-ordnance-related material. The proposed future land use for the northern wharf area is not currently known. Potential future human receptors may include Navy personnel (including EOD personnel), future construction workers (for maintenance activities at the pier or vessels, demolition of damaged portions of the pier, river dredging, or future land construction in the area), fishermen, and recreational users of the Southern Branch of the Elizabeth River (e.g., boaters, divers). Although ecological receptors do not typically engage in activities that expose them to the ordnance, release of MC through degradation and potential activities in support of munitions response, such as blow-in-place operations, may affect the ecological receptors.

4.1.5 Ecological Profile

Potential MC release and future activities at or near the areas of concern, such as investigations and MEC detonations, may impact ecological receptors. The western side of the wharf area is surrounded by both industrial areas and grassy areas, and the Southern Branch of the Elizabeth River is to the east of the wharf area. The Southern Branch of the Elizabeth River provides a variety of aquatic habitat types for a number of ecological receptors. Several species of submerged aquatic vegetation and a variety of fringing marsh species occur in the oligohaline/mesohaline aquatic habitats present. The river also supports a diverse array of estuarine benthic-dwelling organisms, including insects, annelids, mollusks, and crustaceans. Additionally, aquatic organisms, particularly estuarine

and marine fish, inhabit the river and surrounding areas. Many of the fin fishes inhabiting the river are both recreationally and commercially valuable species. Avian and mammalian wildlife are also potential ecological receptors.

4.2 Pathway Analysis

Potential source-receptor interactions are defined in this section to identify the potential for exposure to the possibility of MEC at MRP Area UXO 0001. There are three key components to be considered during pathway analysis. For MRP Area UXO 0001, these items are defined below.

4.2.1 Source

The source of the potential MEC was previously defined as the loading and unloading operations where ordnance items that may have been dropped or mishandled and released into the Southern Branch of the Elizabeth River at the wharf associated with MRP Area UXO 0001. This may have occurred in two areas: the north wharf area and the south wharf area. As previously discussed, the exact location, quantity, and depth of items potentially released are currently unknown. It is anticipated that ordnance items that may have been dropped from the wharf areas are either on the surface of the riverbed floor or are partially or completely buried in the sediment.

4.2.2 Receptors

Current and future receptors are identified in the previous sections. They are construction workers, fishermen, and recreational swimmers/divers. Ecological receptors at MRP Area UXO 0001 include aquatic vegetation (wetlands), benthic organisms, estuarine and marine fish, and wildlife.

4.2.3 Interaction

Source-receptor interaction at MRP Area UXO 0001 could occur in the following ways:

- Construction workers encountering MEC during pier or vessel maintenance, repairs, demolition or during future construction activities in or around the wharfs (such as digging or dredging)
- Fishermen contacting MEC during fishing, trolling, crabbing, etc., activities or by munitions items becoming entangled in fishing nets or gear
- Recreational swimmers and divers encountering MEC during swimming and diving
- EOD or site workers encountering MEC during investigations, sampling activities, or ecological studies
- Ecological receptors exposed to MC released from deteriorated MEC items
- Ecological receptors exposed to MC and other dangers during detonation of MEC

Access of human receptors to the locations of the potential MEC is limited by the depth of the water near the wharf areas, particularly at the southern wharf area, where the water is

deeper. However, access is not completely restricted. Additionally, ecological receptors such as fish and other aquatic species have unrestricted access to potential MC through direct contact (sediment and water) of lower trophic-level species (i.e., benthic and aquatic organisms). Wildlife may be exposed to these constituents through ingestion of chemicals that have accumulated in prey, ingestion of surface water, and incidental ingestion of sediment while foraging or grooming. The activity associated with each source-receptor interaction is presented in the bulleted items above.

SECTION 5

Preliminary Assessment Report

A PA report will be prepared to summarize the results of the PA. This PA report will contain six sections, which will be organized as follows:

- **Section 1, Introduction**: Details the purpose of the PA report and the report structure.
- **Section 2, Review of Existing Information**: Reviews and summarizes data collection activities, MEC inventory and classification, and DERP Management Guidance (MRP eligibility).
- **Section 3, MRP Area UXO 0001 Description, Operational History, and Waste Characteristics**: Describes the history, location, and operations conducted at SJCA and MRP Area UXO 0001. It will also provide detail for the physical setting of the areas of concern, including boundaries, climate, terrain, access restrictions, vegetation, geology, hydrology, hydrogeology, soil characteristics, and adjacent land use. Additionally, a narrative on natural and cultural resources within SJCA, and a summary of relevant previous investigations completed will be included.
- **Section 4, Pathway and Hazard Assessment**: Presents the CSM, discusses the MEC and explosive hazards, identifies other constituents of concern, presents the population summary (demographics), and summarizes the development of the Munitions Response Site Prioritization Protocol (MRSPP). Tables 1 through 28 of the MRSPP will be completed, to the maximum extent possible, and included as an appendix to the PA report.
- **Section 5, Conclusions and Recommendations**: Identifies the ordnance and explosive risks, identifies risks associated with any other constituents, and provides recommendations (including budgetary cost-to-complete estimates) for next steps.
- **Section 6, References**: Lists documents and sources cited or used in the development of the PA Report.

SECTION 6

Schedule

The following schedule is anticipated for PA activities. Based on the proposed document submission and review schedule, the start date for the records search is anticipated to be January 12, 2009.

Event	Complete Date
Draft PA Work Plan	11/11/08
Draft CSM	11/11/08
Draft PA Work Plan Review	12/11/08
Final PA Work Plan	01/12/09
Records Search	02/10/09
Draft PA Report	03/12/09
Navy/Regulator Review of Draft PA Report	05/12/09
Final PA Report	06/12/09

SECTION 7

References

The following references were consulted during the preparation of this PA work plan. Not all are cited in the text.

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Figures

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Legend
St. Juliens Creek Annex

N
W E
S

0 1,250 2,500
Feet

Figure 1-1
Installation Location Map
Preliminary Assessment Work Plan
St. Juliens Creek Annex
Chesapeake, Virginia

CH2MHILL

\\aphrodite\proj\USNavFaceNGCom\StJuliensCreekAnnex\MapFiles\UXO-0001\PAWP\figure1-2_uxo-0001.mxd 11/10/08 MUnwin

Legend
- SJCA Boundary
- UXO-0001 Boundaries

N
W E
S

0 400 800
Feet

Figure 1-2
MRP Area UXO 0001 Investigation Map
Preliminary Assessment Work Plan
St. Juliens Creek Annex
Chesapeake, Virginia

CH2MHILL

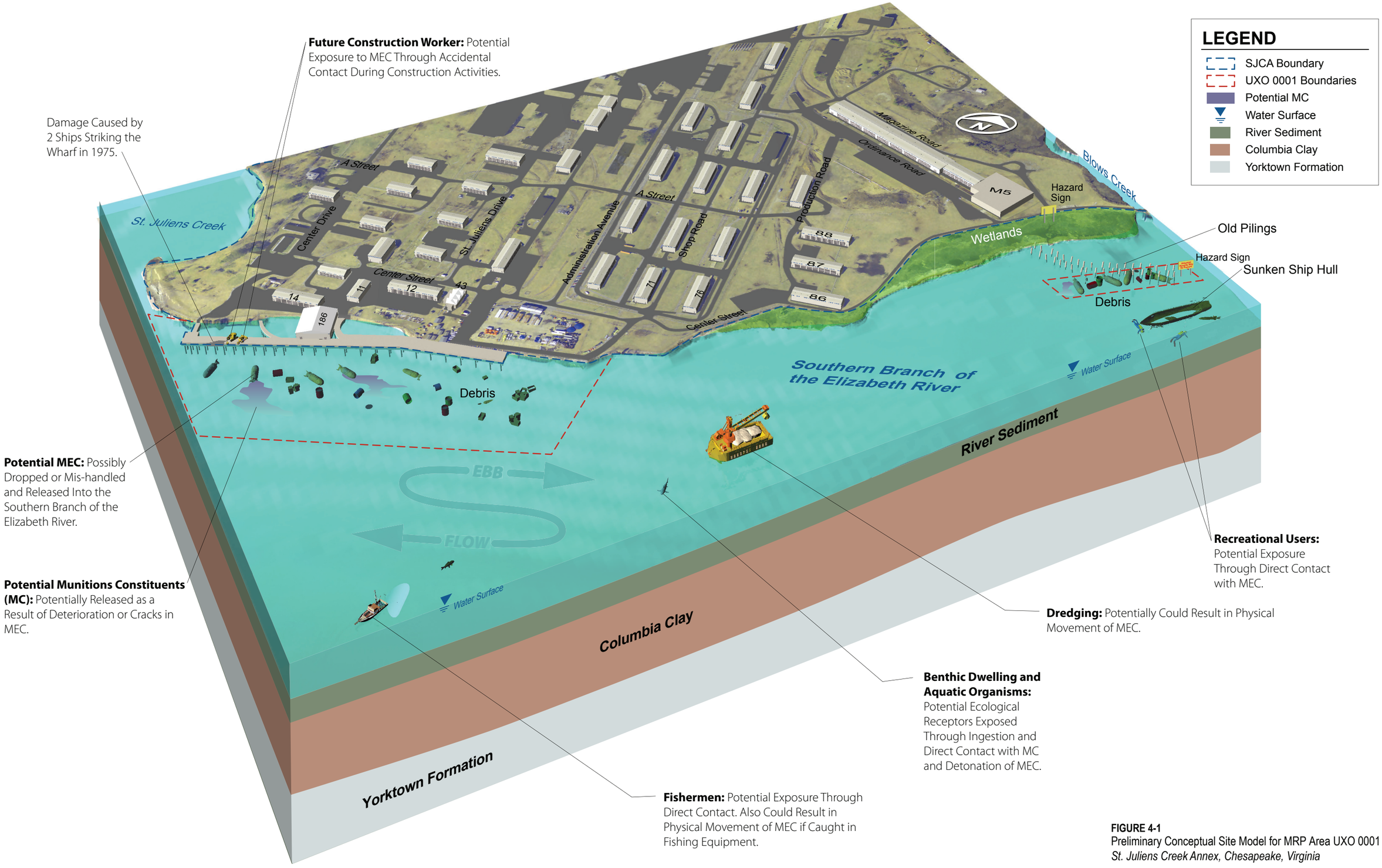

FIGURE 4-1
Preliminary Conceptual Site Model for MRP Area UXO 0001
St. Juliens Creek Annex, Chesapeake, Virginia

Attachment 1
Document Log Sheet

Preliminary Assessment Document Log

Employee Name:	**Date/Time:**
Facility/Activity:	**Document Title:**
Area Affected:	**Data Source:**
Digital Data File Name:	**Disc Title:**
Nature of Document/File:	
Notes:	

Attachment 2
Interview Log Sheet

EXAMPLE INTERVIEW LOG SHEET

Interviewee:

Date and Location:

Interviewer:

Note: This record was not transcribed from a recorded conversation. It was reconstructed from interview notes, so the conversation is paraphrased.

What is/was your affiliation with the site?

What is/was your position?

What activities were you involved with?

What types of ordnance or military munitions were used?

Where (on the base) did activities take place?

Do you know of any areas of concern, possible drop points, or areas where MEC may have been released?

Do you know of any previous incidents involving MEC at or near the site?

Do you know of any disposal operations or dumping that may have occurred at or near the site?

Other information?